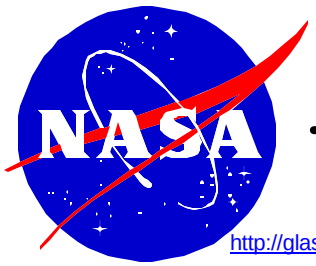
433-PLAN-0004

GAMMA-RAY LARGE AREA SPACE TELESCOPE (GLAST) PROJECT

EEE PARTS MANAGEMENT PLAN

OCTOBER 24, 2002



GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

GAMMA-RAY LARGE AREA SPACE TELESCOPE
(GLAST)
PROJECT

EEE PARTS MANAGEMENT PLAN

OCTOBER 24, 2002

NASA Goddard Space Flight Center

Greenbelt, Maryland

GLAST PROJECT EEE PARTS MANAGEMENT PLAN

Prepared by:

Original Signed

_____ _____
Thomas Perry/Code 562 Date

Approved by:

Original Signed

_____ _____
Vinod Patel/Code 562 Date

Original Signed

_____ _____
Patricia Huber Date
GLAST Systems Assurance Manager

Original Signed

_____ _____
Elizabeth Citrin Date
GLAST Project Manager

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TABLES

1.0 PURPOSE

This document establishes and describes the duties of the Goddard Space Flight Center (GSFC) Project Parts Engineer (PPE) in support of the Gamma Ray Large Area Space Telescope (GLAST) Electrical, Electronic, and Electromechanical (EEE) parts program to assure all parts selected for flight hardware meet mission performance and reliability objectives.

2.0 SCOPE

This plan incorporates the intent of the Mission Assurance Requirements (MAR) for the Large Area Telescope (LAT) with the existing contractual requirements in place for the GLAST Burst Monitor (GBM) and spacecraft and shall be extended to cover, as applicable, on a case-by-case basis, any new Memorandums of Agreement (MOA) or Understanding (MOU), Statements of Work (SOW), or other types of GLAST contracts requiring EEE parts support.

3.0 APPLICABLE DOCUMENTS

300-PG-7120.2.1	Mission Assurance Guidelines (MAG) Implementation
GPG 5340.3B	Preparation and Handling of Alerts and Safe Alerts
GSFC 311-INST-001	Instructions for EEE Parts Selection, Screening, and Qualification
GSFC PPL-21	Goddard Space Flight Center Preferred Parts List PPL-21
GSFC S-311-M-70	Specification for Destructive Physical Analysis (DPA)

4.0 GENERAL

The GLAST PPE receives direction from the Project Manager or via the designated representative, the System Assurance Manger (SAM), and coordinates activities with the Code 562 Assistant Technical Representative (ATR) under the direction of the Code 562 Component Technologies and Radiation Effects Branch Head.

In addition to the duties and responsibilities detailed in the following sections of this document, the GLAST PPE shall also perform the following tasks as a minimum:

- Assist the SAM with development of parts control and management requirements to meet the mission reliability goals in accordance with the Mission Assurance Guidelines (MAG). The PPE shall provide support activities to include surveys or audits, attending meetings, reviewing NASA documents for applicability, and preparing the necessary documentation for the parts requirement section of the instrument(s) and/or spacecraft Mission Assurance Requirements (MAR) or Statements of Work (SOW).
- Review the developer's parts program control plans and provide written recommendations to the SAM for approval.
- Work with the developer, contractor, or subcontractor to provide guidance and initiate their parts programs.
- Monitor progress of implementing the developer/contractor/subcontractor parts programs.
- Review all ongoing parts related activities at the developer/contractor/subcontractor for compliance to program requirements, to include (but is not limited to) items such as receiving & test inspection procedures and reports, Destructive Physical Analysis (DPA) or Failure Analysis (FA) procedures and reports, derating as necessary, development of Parts Identification Lists (PIL) and the Project Approved Parts List (PAPL).
- Interface with design engineers on an as needed basis to select acceptable EEE parts.
- Support SOWs, procurement specifications or Selected Item Drawings (SID) activities on an as needed basis.
- Assist with gathering cost, delivery, catalog or reliability data from manufacturers and distributors, making purchasing recommendations and developing "workarounds" to support project build schedules.
- Work with the reliability engineering organization and provide data needed to determine the reliability of EEE parts intended for project use.
- Assist the project with establishing the risk associated with availability of parts for the GLAST project and work with cognizant PPE's to make sure long lead items are delivered in accordance with the master schedule.

- Establish a mechanism for PPE's across GLAST to share parts list information.
- When there are no specific mission assurance requirements in place to govern a particular part commodity or activity, provide technical parts advise to the project.
- Attend meetings as necessary to support the above activities to include regularly scheduled staff meetings.

5.0 PARTS CONTROL BOARD (PCB)

The GLAST PPE is a voting member of the PCB that administers the project's parts control plan and shall participate in the meetings on a regular basis, either in person or via teleconferencing. Meeting minutes shall be maintained by the developer to document all parts decisions made. The GLAST PPE must review and respond to the meeting minutes within 10 days if there is any intent to correct or dispute the written record.

6.0 PARTS SELECTION AND PROCESSING

The GLAST PPE shall support selection and processing of EEE parts in accordance with established GSFC requirements for quality level parts as detailed in GSFC 311-INST-001, *Instructions for EEE Parts Selection, Screening, and Qualification.* The GLAST PPE shall perform vendor surveys or customer source inspections as necessary, budget permitting, to assure compliance with the parts program requirements.

7.0 CUSTOM DEVICES

The GLAST PPE shall participate in design reviews for custom devices to assure that any tailoring of requirements to meet the part's technology is consistent with quality level requirements imposed on similar approved devices. The GLAST PPE shall participate in any risk assessment activities associated with a custom device in its application and help to determine whether a project deviation or waiver is appropriate to document its use.

8.0 DERATING

The GLAST PPE shall access the risk and notify the SAM whenever a parts application does not conform with the derating requirements of Appendix B to GSFC Preferred Parts List (PPL) 21. The GLAST PPE shall evaluate any project waiver requests for derating relief and provide written recommendations.

9.0 RADIATION HARDNESS

The GLAST PPE shall support all parts related activities needed to determine whether a part complies with the project's radiation requirements. The PPE shall obtain data from the manufacturer; search the GSFC, JPL and other radiation databases for test data; and expedite the preparation of parts for radiation testing when requested by the Project Office. The GLAST PPE shall evaluate project waiver or deviation requests for radiation tolerance relief and provide written recommendations.

10.0 VERIFICATION TESTING

The GLAST PPE shall evaluate screening or qualification test data for flight parts as necessary to determine whether retesting is required, as indicated by failure history, GIDEP alerts, or other reliability concerns.

11.0 RISK ASSESSMENT AND MITIGATION

The GLAST PPE shall track items deemed critical to the success of the mission and support related parts activities, such as

- Coordination with Code 300 and the Project Office for reliability purposes, providing the parts lists and associated established quality numbers to enable reliability engineering to calculate life and make failure rate predictions.
- Maintaining a long lead items tracking list based on input from the developer or contractors to assure inferior parts are not substituted because of procurement delays.
- Monitor the contractor/developer parts program progress to ensure timely implementation, auditing as necessary to provide progress feedback to the Project Office.

12.0 DESTRUCTIVE PHYSICAL ANALYSIS (DPA)

The GLAST PPE shall evaluate developer's procedures for DPA that are proposed for use in lieu of S-311-M-70 and make written recommendations to the project SAM. Whenever necessary, in order to meet the project's build schedules, the PPE shall assist with the preparation of work requests for DPA and negotiate favorable due dates to expedite the GLAST evaluations when requested by the Project Office.

13.0 FAILURE ANALYSIS

Whenever necessary, the GLAST PPE shall take a proactive role in obtaining failed parts, preparing the necessary paperwork, such as work requests for the failure analysis, coordinating priority in the FA laboratory for a timely analysis when requested by the Project Office, and shall disseminate the information to the cognizant project personnel.

14.0 PARTS AGE CONTROL

The GLAST PPE shall access the risk associated with using parts that do not meet the GLAST shelf life requirement and make recommendations and arrangements for any necessary retesting in accordance working in conjunction with the other members of the PCB.

15.0 PARTS LISTS

The GLAST PPE shall support the developer's preparation of a Parts Identification List (PIL) and a Project Approved Parts List (PAPL) for the duration of the project. As a member of the PCB, the PPE shall evaluate each part submitted on a PIL and make written recommendations for parts to be added to the PAPL. The PPE shall assure that the project parts lists are uploaded and maintained in the NASA Electronic Parts Information Management System (EPIMS) database.

16.0 ALERTS

The GLAST PPE shall review the disposition of GIDEP alerts and advisories submitted by the contractor/developer. In the event of conflict, the PPE shall access risk and make recommendations to the Project SAM. The GLAST PPE shall also assure that responses to the Alert Distribution Report(s) are provided to the GSFC Alert Coordinator in accordance with GPG 5340.3B. If the project experiences part failures of a nature normally warranting GIDEP action, the PPE shall support the assessment as to whether a GIDEP alert/advisory or NASA advisory is appropriate and shall participate in its preparation.

17.0 INFORMATION SHARING

The GLAST PPE shall maintain a matrix listing pertinent parts information that can be used to readily exchange information between cognizant project design/parts engineers. The matrix shall be of a format similar to the example in Table 1 of the Appendix to this document but may be modified to meet future needs as the project matures.

18.0 WEEKLY STATUS REPORT AND MATRIX

The GLAST PPE shall develop a plan to report the progress of the developer/contractor parts programs using a matrix similar to the example in Table 2 of the Appendix to this document. As a minimum, the distribution list for the weekly status report shall be the GLAST SAM, the project PPE's, the Code 562 ATR, the Code 562 Branch Head and any others designated for distribution by the Project Office.

APPENDIX A

TABLE 1 – EXAMPLE OF PARTS LIST INFORMATION MATRIX

ITEM	POINT OF CONTACT	PARTS LIST SUBMITTED (LOCATION)	RISK ASSESSMENT (QUALITY, RELIABILITY, AVAILABILITY)			COMMENTS
			R	Y	G	R = not ready
Spacecraft						Y = proceed/caution
Subsystem 1						G = go ahead
Subsystem 2						
Subsystem N						
Instrument 1						
Subsystem 1						
Subsystem 2						
Subsystem N						
Instrument 2						
Subsystem 1						
Subsystem 2						
Subsystem N						
Instrument N						
Subsystem 1						
Subsystem 2						
Subsystem N						

TABLE 2 – EXAMPLE OF WEEKLY REPORT MATRIX

ITEM	CON-TRACTOR	PARTS PLAN DOCUMENT NUMBER	PCB ACTIVITY (DATE)	PIL STATUS	PAPL STATUS	COMMENTS
Spacecraft						
Subsystem 1						
Subsystem 2						
Subsystem N						
Instrument 1						
Subsystem 1						
Subsystem 2						
Subsystem N						
Instrument 2						
Subsystem 1						
Subsystem 2						
Subsystem N						
Instrument N						
Subsystem 1						
Subsystem 2						
Subsystem N						